Claims

What is claimed is:

1. The method of altering a fluid-borne contaminant, comprising the steps of:

providing a pump having an inlet and an outlet;

connecting said pump inlet to a source of contaminated fluid;

operating said pump at a pressure ratio of at least 2.0 so as to sufficiently elevate the temperature of the fluid and contaminants passing through said pump; and

controlling the time during which the temperature of said fluid and contaminants are elevated;

thereby to alter substantially all of said contaminants passing through said pump.

2. The method as set forth in claim 1 wherein said contaminants are altered by chemical reduction.

3. The method as set forth in claim 1 wherein said contaminants are altered by oxidation.

4. The method as set forth in claim 1 wherein said contaminants are altered by combustion.

5. The method as set forth in claim 1 wherein said contaminants include a particle.

6. The method as set forth in claim 1 wherein said contaminants include a biological agent.

7. The method as set forth in claim 6 wherein said biological agent is selected from the group consisting of: a spore, a bacteria, a virus, a pathogen, a fungus, and a pollen.

8. The method as set forth in claim 1 wherein said fluid includes a compressible gas.

9. The method as set forth in claim 1 wherein at least some of said contaminants are entrained in said gas.

10. The method as set forth in claim 1 wherein said pump is a Roots-type positive displacement pump.

11. The method as set forth in claim 1 wherein said pump is a compressor.

12. The method as set forth in claim 1 wherein said pump includes a piston-and-cylinder.

13. The method as set forth in claim 1 wherein said pressure ratio is the pressure at said pump outlet divided by the pressure at said pump inlet.

14. The method as set forth in claim 1 wherein said time is controlled by restricting the flow of fluid and contaminants passing through said pump.

15. The method as set forth in claim 1 wherein the temperature of said fluid and contaminants is heated to at least about 200°C at said pump outlet.

16. The method as set forth in claim 1 wherein said pump is a first pump, and further comprising the additional steps of:

providing a second pump; and

causing contaminated fluid from said source to pass sequentially through said pumps.

17. The method as set forth in claim 1, and further comprising the additional step of:

preheating the temperature of the fluid entering said pump with heat provided from the temperature of fluid exiting said pump.

18. The method as set forth in claim 1 wherein a fuel is entrained in the fluid supplied to said pump.

19. The method as set forth in claim 1 wherein a reagent is entrained in the fluid supplied to said pump.

20. The method as set forth in claim 1, and further comprising the additional steps of:

sampling the fluid exiting said pump to determine the extent to which contaminants therein have been converted; and

adjusting the operation of said pump so that substantially all of said contaminants are converted by passing such contaminated fluid through said pump.

21. The method of altering a fluid-borne contaminant, comprising the steps of:

providing a pump having an inlet and an outlet;

connecting said pump inlet to a source of contaminated fluid;

operating said pump so as to elevate the temperature of the fluid and contaminants passing through said pump to at least about 200°C; and

controlling the time during which the temperature of said fluid and contaminants are elevated;

thereby to alter substantially all of said contaminants passing through said pump.